Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
The Development of Operational,	)	WT Docket No. 96-86
Technical and Spectrum Requirements	)	FCC 05-9
for Meeting Federal, State and Local	)	
Public Safety Communication	)	
Requirements Through the Year 2010	)	

To: The Commission

COMMENTS OF THE MISSOURI STATE HIGHWAY PATROL

I Introduction

1. The Missouri State Highway Patrol hereby submits the following comments in response to FCC 05-9, Docket 96-86 Seventh Notice of Proposed Rulemaking, released January 7, 2005, in which the Commission seeks input and comment on their tentative conclusions regarding National Coordination Committee recommendations in their Final Report to the Commission.

2. The Missouri State Highway Patrol (MSHP) is the primary statewide law enforcement agency within the State of Missouri, with responsibility covering an area of over 69,000 square miles. Consisting of 114 counties and the City of St Louis, public safety representatives in Missouri, as in many other states, face challenging public safety spectrum requirements due to both diverse topography and demographics indicating that more than 60 percent of the states population resides in just ten (10) of the state's 115 county-like entities. The introduction of new technologies to Missouri's public safety community, and, more importantly, the applications created by those technologies, is imperative in ensuring that Missouri's First Responders are able to complete the mission before them.

3. Representatives of the MSHP have been closely involved in a variety of public safety communications regulatory issues addressing public safety regional planning, national interoperability initiatives, and frequency coordination. In addition representatives have worked in support of initiatives such as the Software Defined Radio Forum, which is intended to increase both radio spectrum efficiency and public safety interoperability potential, while also participating in Commission sponsored panels on such topics as Cognitive Radio and its potential impact on public safety.

4. Members of the Patrol's Communications Division have testified in support of public safety's positions before the United States Senate, Committee on Commerce and before the United States House of Representatives, Committee on Government Reform, addressing both interoperability and state planning public safety concerns. In addition, Communications Division representatives of the Highway Patrol have contributed greatly to issues discussed within this particular Docket. As both a participant and as Chair of the Rules, Policy and Spectrum Planning Working Group within the Interoperability Subcommittee of the National Coordination Committee (NCC), MSHP personnel participated in the NCC. In addition to its national public safety spectrum-planning commitments the MSHP sponsors spectrum management planning within Missouri as well. The Association of Public Safety Communications Officials (APCO) Automated Frequency Coordination (AFC) Local Advisor for Missouri, who assists local Missouri agencies with FCC licensing, spectrum management and frequency coordination, is sponsored and employed by the MSHP with the understanding that the majority of his workload will be dedicated to public safety communications issues within Missouri. The MSHP also supports, funds and dedicates personnel to furthering regional planning resources for Region 24 (Missouri) Regional Planning Committees at both 700 and 800 MHz.

5. It is with its subject matter experience, its high degree of participation in the National Coordination Committee and long-term contributions to the ongoing development of operational and technical parameters in the 700 MHz public safety bands, that the Missouri State Highway Patrol submits the following comments.

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Adoption of a Wideband Data Standard

Having participated in the National Coordination Committee, MSHP representatives followed with interest the introduction and subsequent development of the TIA-902 wideband data standard as well as the discussion designating Project 25 Phase I as the 700 MHz narrowband interoperability standard. MSHP personnel strongly supported the NCC Project 25 Phase I 12.5 KHz standard narrowband interoperability designation to be utilized in the conventional operating mode as the interoperability standard. Based on its history of use as a true open effective digital standard in the public safety marketplace. It is our opinion that designating a specific number of interoperability channels in the band as the Commission has done, designated to achieve interoperability in the conventional mode of operation truly represents the most flexible local public safety interoperable resource retaining the highest interoperable quotient. The conventional use of such a digital standard can offer a common operating platform within a community where legacy proprietary trunked radio networks have been developed and operate in the same radio band. This platform becomes an invaluable “bridge” as community based incident planning can capitalize on the commonality of the standardized digital interface, used in the conventional mode, as subscriber units are required to be capable of operating on the thirty two (32) narrowband interoperability channels designated by the Commission in the 700 MHz public safety band.

With regard to narrowband voice/data standardization, as public safety subscriber units continue to be developed containing multiple operating modes, the FCC mandatory requirement for the conventional interoperable use of this interface in the 700 MHz band will increase the ability for communities operating in the band to have

conventional andadaptable interoperable resources available to them. MSHP believes the conventional mode of operation, while offering less capacity than the trunked mode of operation, can allow quicker access to conventional radio environments by itinerant users arriving on the scene of a critical incident. Aided by proper regional planning and preparedness, the conventional mode of operation's ability to quickly accommodate users from multiple proprietary trunked networks within a community, as well as itinerant first responders and specialists from outside the area arriving on-scene to render assistance, is underutilized and overlooked as an interoperable tool in today's Homeland Security communication environment. Manufacturers often downplay the conventional mode of operation as a regional interoperability solution in favor of solutions less open to other manufacturers, many of who today develop conventional based Project 25 Phase I subscriber equipment capable of operating in the 700 MHz conventional, interoperable Project 25 mode.

Despite the interoperable benefits and obvious marketplace advantages of the participation of multiple vendors producing product utilizing the Project 25 conventional operating mode in multiple bands, the advantages of subscribers of systems developed by multiple manufacturers in an area utilizing the conventional mode do not seem to be capitalized on by granting authorities. Grants continue to be distributed for individual agency system development without consideration of the systems and protocols operating in the communities of the applicant. Rarely is the applicant's use of conventional mode of operation even asked by granting authorities. Rather than acknowledge the conventional possibilities inherent in all devices, regardless of age and protocol, operating in the band within a region, these questions, to identify if there can be a bridge of interoperability between area radio systems developed on multiple protocols, are rarely asked of the applicant.

Fortunately, the Commissions requirement of the narrowband Project 25 Phase 1 digital interface will require users in the band to be capable of operating on this common conventional platform, available to all users in the band, regardless of the manufacturer of their internal radio system, on a subscriber-to-subscriber basis. It is important to note that the application of the Project 25 Phase I digital interface has been identified as narrowband data and voice operations, with voice operations being the predominant application used *between subscribers in an on-scene environment*. The conventional narrowband interoperability designation by the Commission for the established interoperability channels, and its requirement that all subscriber devices operating in the band be capable of operating in the Project 25 Phase I mode, is valid due to public safety's established history with the conventional Common Air Interface and the fact that is has been proven to enable interoperability when utilized as a digital common operating platform.

Although both narrowband and wideband public safety data interoperability applications are considerably less defined by public safety when compared to established voice interoperability applications *as defined by the user community through experience*, the adoption of the TIA-902 standard by the NCC, as developed by TIA, is valid. While physical layer standardization has been proven to by

no means provide the sole method of achieving data interoperability between public safety users, as identified by current commercially enabled public safety network based data interoperability initiatives underway across the nation, the Commission's vision that the standardization of an interface to enable "unit to unit" subscriber based wideband data interoperability, should be explored and the MSHP feels the TIA-902 standard should be adopted as a 700 MHz wideband data interoperability standard. As an agency participating in the NCC, it was discussed that if public safety waited for the manufacturers, operating alone, to establish an interoperability mode for public safety, it may never get done. While we support the standard, we do not support the Commission's suggestion of all wideband data devices being required to carry the wideband standard at this early juncture of public safety wideband data development and use. The requirement that future wideband data applications using the identified standard be utilized on only the currently FCC designated eighteen (18) Interoperability Channels is, we believe, sufficient at this time.

Requirement of Wideband Mobile and Portable devices be capable Of operating on all Wideband Interoperability channels using the Wideband data standard

As discussed during and since the NCC's conclusion, the lack of the user communities exposure to channel bandwidths of 50 KHz or greater (or the applications offered by such bandwidths), indicates caution should be exercised before adopting a physical standard that is required to carry all wideband data channels in the 700 MHz public safety band. The Commissions designation of eighteen (18) 50 KHz wideband data channels, as Interoperability Channels required to be able to operate and carry a defined standard, we believe, is sufficient to provide a developmental proving ground for the beginnings of wideband public safety subscriber oriented and physical layer based data interoperability development. The Commission should remain cognizant that when attempting to establish a parallel between the requirements associated with public safety voice interoperability and data interoperability in an environment absent network connectivity (unit to unit), *the user community has not had an opportunity to validate the benefits derived from applications developed from any suggested data interoperability standardization, through practice*.

The Commission's statement that rules governing interoperability channels should be similar for wideband and narrowband mobile and portable radios indicates the

Commission is unfamiliar with the completely different expectations of the public safety community regarding their voice and data applications. Voice applications, currently defined as mission critical applications, need to offer the capability of quickly managing its conventional resources with other subscribers and dispatch centers, while providing robust operational on-scene capabilities. Conversely public safety's expectations for their data applications, many being utilized and offered by commercially developed data backbones/networks utilizing such technologies as CDPD (Cellular Digital Packet Data), accompanied by a higher degree of latency than their parallel voice expectations, are acceptable *based on the necessary application, as defined by the end user.* The end users truly have a differing expectation of their voice and data needs and have not, *through practice,* been able to solidify their data expectations and subsequent interoperability needs in the same manner as they have with voice.

While national associations and their members can represent the public safety community at a higher administrative level, often intimate technical details of the public safety communities needs are overlooked in such forums due to the high level nature of the forum and the issues it addresses. In addition national public safety forums representing the public safety user community can, at times, include a larger number of participants from outside the public safety user community, and the conclusions of those bodies can include input from non-public safety users. As a participant in such forums, often currently employed public safety personnel attending meetings representing end users are not sufficiently represented and their voices can be outnumbered by other interests. There is no substitute for what the end user, over time and practice, identifies as valid and beneficial to accomplishing their mission..

While the Commission's recommendation to require all public safety 700 MHz narrowband voice devices a standardized interface in the 700 MHz band is valid, this is due to applications associated with the standard having been proven beneficial and effective by the user community. No such user confirmation of interoperability derived from applications has been associated with regard to wideband data in the 700 MHz public safety band. Simply put, public safety wideband data interoperability applications benefiting the first responder community, that will be enhanced by the Commissions requirement of a wideband data standard be carried by all wideband data devices, have yet to be identified.

Even in instances when interoperability requirements are identified by the user community, time must be afforded for first responders to provide feedback on which interoperability characteristics are lacking and required in current applications, and, absent a standard, how the community experiences a reduction in interoperability. Once those conclusions have been reached a standard can be implemented to meet those identified needs. Regarding wideband data standardization, the nations first responders have had no opportunity to provide comments and feedback on wideband data interoperability *after practice in the field.* The benefits that can be realized by the requirement of a physical standard in each wideband data device should be clearly defined by the users, and the requirement for all devices to carry a interoperability standard before the benefits of such a standard are defined will cause the user

community to suffer increased costs for little return. The Commission requiring the standard to be carried in all wideband data devices is, at this time, premature.

Conversely, the users in the field have found applications for voice interoperability both effective and beneficial. The Commissions standardization and requirement of a narrowband conventional digital interface has improved the effectiveness and promoted interoperability between on-scene subscribers from multiple agencies operating independent networks. While physical layer based public safety wideband data has yet to be identified as an asset by the user community based on the lack of user interface and beneficial applications identified in the field through *practice* and the resulting user input, the designation of eighteen (18) of the allocated 50 KHz channels labeled as Interoperability Channels is an appropriate and sufficient number of channels to require the carriage of the established 700 MHz wideband data interoperability mode, and will allow sufficient spectrum resources to public safety for the introduction of a practical user dialogue on the merits of wideband public safety data interoperability.

The Commissions suggestion for all of the one-hundred twenty (120) wideband data channels pairs (which includes the fifty four (54) wideband 50 KHz channel pairs still held in reserve) allocated by the Commission be required to carry the wideband data standard is excessive at this early stage of public safety operational, end user development. and will create the requirement of more capability than can be currently utilized with today's public safety community. MSHP feels that making a parallel between the rules governing interoperability channels should be reconsidered based on the user input and identification of an increase in the interoperability quotient by the implementation of the standard. Since there are no current devices operating in the field indicating progress and the improvement of interoperability within a region based on either wideband or narrowband subscriber-to-subscriber based technologies, we feel the eighteen 50 KHz channel pairs is sufficient to further interoperability at this time.

The adoption of minimal signal strength design criteria for public safety Systems operating in the 700 MHz Public Safety Band

The MSHP, as a public safety entity that supports the concept of 700 MHz regional planning and has coverage responsibility and service to the public requirements in an area of the country where the 700 MHz band is available, the MSHP feels that the NCC recommendation of a systems minimal signal at the edge of its service area be no less than 40 dBu/V (forty decibel above one-microvolt per meter) is valid. The recommendation of the use of TIA Technical Services Bulletin No. 88 (TSB 88) by both the applicant and the regional planning committee when considering public safety 700 MHz co-channel and adjacent channel assignments also offers system planners proven development guidelines, enabling applicants to

achieve the most effective and robust system development operation of their communications resources. Regional Planning Guidelines distributed by the NCC and made available to the public safety community offer positive system development suggestions for those planning 700 MHz public safety systems. Considering that system design criteria must acknowledge nearby co-channel and adjacent channel users of the band using multiple bandwidths and technologies in their system development, both applicants and system users should remain cognizant of the use of the band in their community. The Commission should promote the review of the NCC Regional Planning Guidelines document, posted on the Computer Assisted Pre-coordination Resource and Database system (CAPRAD), by potential users of the band.

Requiring the use of standard channel nomenclature for Interoperability channels and requiring mobile and portable units certificated for use under Part 90 of the Rules be capable of displaying standardized interoperability Channel labels alphanumerically if the radios are equipped with alphanumeric displays.

Being involved in the National Coordination Committee process and having, as an agency personnel assigned to this particular initiative within the NCC's Interoperability Subcommittee, the MSHP is well aware of the Commissions decision in this matter. Indeed, declining to mandate the use of a standard channel nomenclature for interoperability channels and declining to require that mobile units be capable of displaying standardized Interoperability Channel labeling alphanumerically if equipped with alpha-numeric displays, was a disappointment to those involved in the development of that initiative. This item was one of several identified as integral in the furthering of national public safety communications interoperability, while being beneficial to interoperable development with a high degree of benefit at low cost.

The MSHP feels that a Commission *recommendation* for standardization of channel labeling with regard to the FCC designated interoperability channels would also benefit public safety communications interoperability. A recommendation of usage by the Commission will create a dialogue for addressing what channel labels are to be used in each state and their regions with regard to channel naming. Opportunities to document each state and regions use of the various channel names, while not being as beneficial as the development and requirement of a national standard, will offer at least the ability

for a communications dialogue to be developed. This, with the addition of the NCC recommendation that each state develop a *state interoperability plan* and update such a plan every two (2) years will provide much more awareness and documentation of the protocols used by each state and region regarding channel nomenclature and other interoperability mechanisms achieved at the local level.

A Commission requirement for an interoperability plan to be developed by each state is consistent with the Commissions indication in the Seventh NPRM that instate planning issues, such as standardized channel nomenclature, technical and operational parameters and channel usage, is best left to the states. The requirement that each of the plans created by the state is documented, available and capable of being viewed on a national forum should be the responsibility of a higher national authority. While the Commission indicates other federal entities are developing such initiatives (which they support), there has been to date no request from the federal government inquiring as to what the interoperable landscape is in each state and region. The details of the makeup of each state's interoperable solutions is information that should be shared on a national basis and, while the development a states interoperable resources should be their responsibility, the distribution of plans documenting such information should be distributed and required nationally.

A recommendation from the Commission to states that the documentation of interoperable plans would promote public safety interoperability would allow those already engaged in such actions to distribute their planning effort and conclusions to their adjacent states and regions, thereby improving the inter-state communications interoperability dialogue. The acceptance of a national channel nomenclature standard is not as important as the establishment and continuance of a national interoperability dialogue that can allow agencies to identify *what* channel names agencies in an area are using, thereby improving the interoperable potential in the region.

The concept of requiring mobile and portable units to display standardized channel nomenclature was developed in the NCC in conjunction with several other items identified in the 700 MHz development process to benefit all FCC designated interoperability channels. While this Docket expressly addressed 700 MHz public safety developments, it also addressed interoperability issues such as interoperability below 512 MHz and the establishment of national, multi discipline interoperability channels for nationwide use. To date, there are no national guidelines technical criteria or operational criteria established for these channels. Subsequently, many states have developed their own plans for the use of these channels. As indicated above, while each state should develop their own criteria for these types of interoperable resources based on their identified need, the Commission should strive to make certain that such plans, if created, are able to be distributed and made available to other public safety agencies seeking to improve

the level of multi-agency interoperability within their community. Whether those plans are administrated by State Interoperability Executive Committees should be dependent on whether that particular state has notified the FCC that they have established such a body.

Revise the term "State Interoperability Executive Committee to "Statewide Interoperability Executive Committee" and mandate the use of State Interoperability Executive Committees and extending their jurisdiction to interoperability channels in all public safety bands, as designated by the Commission.

As indicated above NCC members identified several mechanisms within the NCC process to further interoperability across multiple public safety bands. The change in terminology from State to "Statewide" was intended to address an issue where in several states, SIEC's have become a body that is controlled by state government, rather than administered by the state, which was the Commissions original intent. Many such bodies have begun to operate in states across the country, exploring interoperability administration in and out of the 700 MHz Band, which is a positive step forward to promote the use of wide area planning and the consistent use of interoperable resources throughout a region or state. MSHP urges the Commission to reconsider this issue with a *recommendation* that SIEC or like bodies within states support interoperable planning capabilities within the state, regardless of the public safety band in which the interoperability channels reside. The MSHP urges the Commission to continually review its designated interoperability resources, both discipline specific and multi-discipline channels, to ensure the 99 interoperability channels made available to public safety, by the Commissions rules, are effectively utilized.

Make certain procedural changes to the Commission review of 700 MHz Regional Plans and Mandatory use of Pre-coordination Database

Addressing the FCC plan amendment process within the NCC recommendations was intended to streamline the plan approval process and, in

doing so, create an environment that would encourage regional planning committees to keep their plans current, as they represent the spectrum environment within their region. The Commission's tentative conclusion of its review process is complete, although it should remain cognizant of the regional planning tools and capabilities within the Computer Assisted Pre-coordination Resource and Database (CAPRAD), as it is a location where regional planners migrate to post their regional plans while in process and review plans from adjacent region. In addition the Commission should also consider allowing regions, when deemed necessary, to merge its 800 MHz NPSPAC regional planning committee with its 700 MHz regional planning committee. More often than not, personnel from within a region participate in both regional planning committees and the administrative requirements of the region would be halved in such a merging of regional planning committees. Such a merger should be voluntary and up to the region to decide, with the region responsible for notifying the Commission should they decide it is in the best interest of the region.

Mandatory use of the CAPRAD database is essential to the continuation and development of the regional planning resources and conclusions that resulted from the NCC process. CAPRAD offers the regional planning community assistance in planning and also provides a forum for other 700 MHz users, such as State Geographic Licensees, when planning the use of their 700 MHz spectrum. Indeed, absent a repository such as the CAPRAD database, there will be no nationally available tool to identify 700 MHz State License Use, SIEC resource planning and inventory categorization, the documentation of 4.9 GHz regional usage, and other tools that can assist spectrum managers and regional planners. Without a mandate by the Commission for the publishing of regional 700 and 800 MHz plans on the CAPRAD database, the public safety community will have taken a step backwards to an era when a regional plan languished in an unknown desk drawer, somewhere in the region. The requirement for a region to post their current plans on CAPRAD is no real burden to a region and will make a regions plans available to a wider audience than exists currently.

Finally, the Commission noted in the Seventh NPRM that "while we continue to believe that a pre-coordination database can be a valid planning tool, we deem it significant that neither the States nor the RPC's sought to have the Commission mandate use of a third party database." As an agency that sponsored NCC participation in the 700 MHz development process, we contributed significantly to the National Public Safety Telecommunications Council (NPSTC) and anticipated their comments regarding 700 MHz developments to be considered as input from both States and RPC's. Apparently, the Commission felt RPC's and States should provide input to the Commission individually rather than as a part of national public safety forum. We agree and will continue to provide our positions on important public safety communications issues from the states perspective, when appropriate.

The MSHP thanks the Commission for the opportunity to provide user input on this proceeding. We hope to see the Commission continue to seek comment from the States and regions regarding information on public safety spectrum and interoperability initiatives, when appropriate.

James C. Biggerstaff, Director of Radio
Missouri State Highway Patrol
Communications Division

Missouri State Highway Patrol General
Headquarters
1510 East Elm
Jefferson City, Missouri 65101

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